DOCUMENT RESUME

ED 267 242 CE 043 777

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TITLE Reading a Rule. [Student Worksheets for Vocational Agricultural Courses].
INSTITUTION North Carolina State Univ., Raleigh. Dept. of Occupational Education.
SPONS AGENCY North Carolina State Dept. of Public Instruction, Raleigh. Div. of Vocational Education.
PUB DATE 85
NOTE 10p.; Product of a Project: "Mathematics Competencies Needed in Selected Vocational Agriculture Program Courses." For related documents, see CE 043 771-780.
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Agricultural Education; Computation; High Schools; Learning Activities; Learning Modules; *Mathematical Applications; Mathematics Skills; *Measurement Equipment; *Measurement Techniques; Problem Sets; *Problem Solving; Secondary School Mathematics; Test Items; *Vocational Education; Weight (Mass)

ABSTRACT

This learning module provides students with practice in applying mathematical operations to vocational agriculture. The module consists of unit objectives, definitions, information, problems to solve, worksheets suitable for various levels of vocational agriculture instruction, and answer keys for the problems and worksheets. This module, which covers measurement, provides practice in using rulers, tape measures, and scales. Practical applications include drawing a typical farm layout, making simple working drawings, and planning a plumbing job on a farmstead. (KC)

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READING A RULE

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Funded under a contract through the Research Coordinating Unit, Division of Vocational Education, Department of Public Instruction, under the auspices of federal law 94-482, FY 1985.

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TEACHING UNIT: READING A RULE (SCALE)

TRAINING ACTIVITIES: (1) Reading rules and/or scales

(2) Solving stated problems

UNIT OBJECTIVES: (1) To provide experiences which will enable students to develop an understanding of how to use basic computational skills to solve problems involving reading a rule or scale.

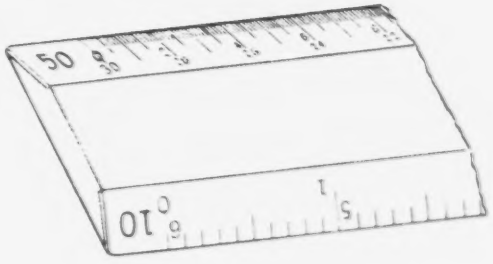
(2) To present arithmetic concepts of reading and measuring with a rule or scale in a manner keeping with the interest of Vocational Agriculture students.

RULES AND/OR SCALES:

Measuring devices have been developed to make it possible to determine the length or to help in drawing line segments accurately. There are several different types of measuring devices on the market today. However, the most common are the architects scale, the engineers scale, the six-foot zigzag (folding) rule and the push pull (tape) rule. The scales are used primarily in drawing or drafting and the rules are usually used to make live measurements.

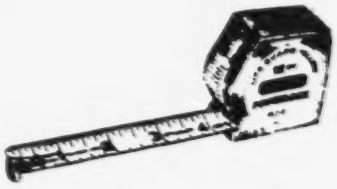
MOST COMMON TYPES OF RULES OR SCALES

ARCHITECTS SCALE



ENGINEERS SCALE

SIX - FOOT ZIGZAG (FOLDING) RULE

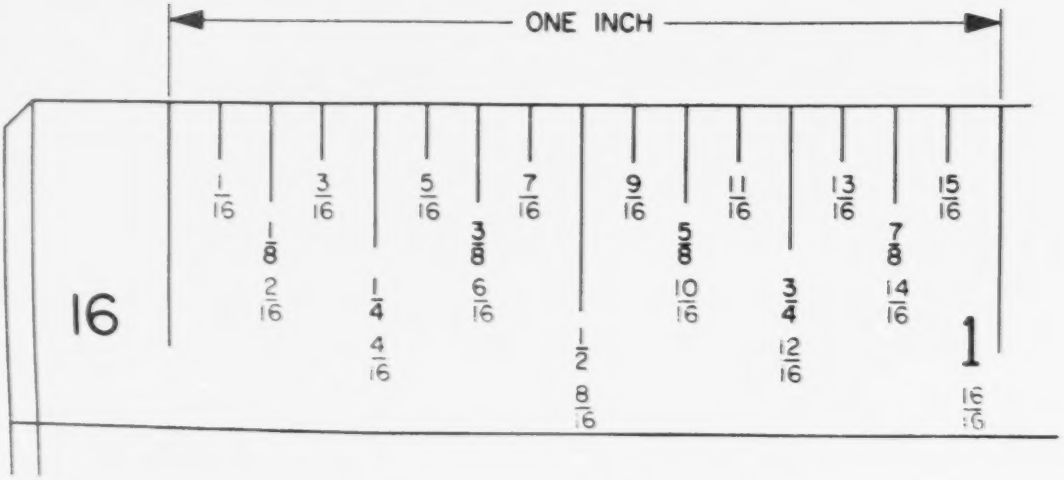


PUSH PULL (TAPE) RULE

READING RULES AND SCALES:

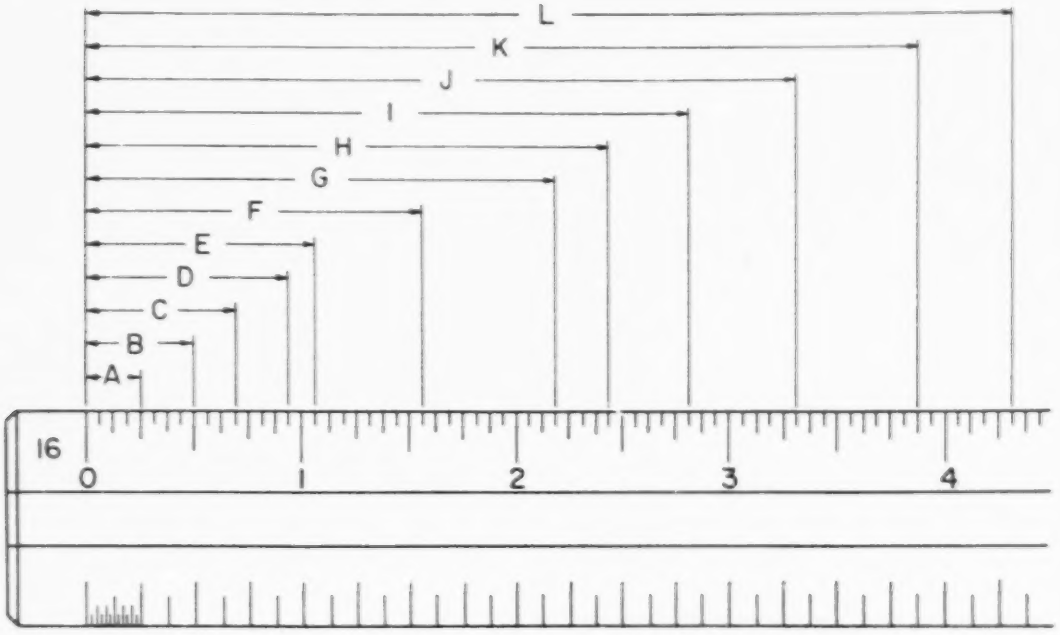
Each type of rule or scale may be graduated differently. However, most will have at least one face where the inch divisions are each divided into sixteen (16) parts. That is, each division is equal to one-sixteenth (1/16) of an inch.

To read, imagine that the one sixteenth (1/16) divisions are numbers as shown in the figure below. At first you may find it easier to count the spaces when you measure. However, after some practice, this should not be necessary.



NAME _____

INSTRUCTIONS: After each letter write the correct measurement. Reduce to the lowest terms.



1. A. _____ B. _____ C. _____ D. _____ E. _____ F. _____
   G. _____ H. _____ I. _____ J. _____ K. _____ L. _____

INSTRUCTIONS: Solve the following problems.

2. What is the sum of the lengths of measurements "B", "F", and L"?
   _____ inches.

3. Measurement "K" is how much larger than measurement "G" ?
   _____ inches.

4. A block of wood that is 5 1/2 times the length of measurement "J" is how long?
   _____ inches.

5. Measurement "F" can be divided into 5 equal parts. Each part would be how long?
   _____ inch.

NAME _____

WORKSHEET

COURSE: **Agricultural Production III**

COMPETENCY: #015 - "Draw or sketch a typical farm layout"

INSTRUCTION: Perform the following operation.

On a separate sheet of paper, draw a farmstead layout using a scale of 1/8 inch equals one foot. Include the following structures:

a. one house (28 feet x 66 feet)

b. one barn (40 feet x 100 feet)

c. one equipment storage shed (28 feet x 120 feet)

d. one utility storage building (24 feet x 36 feet)

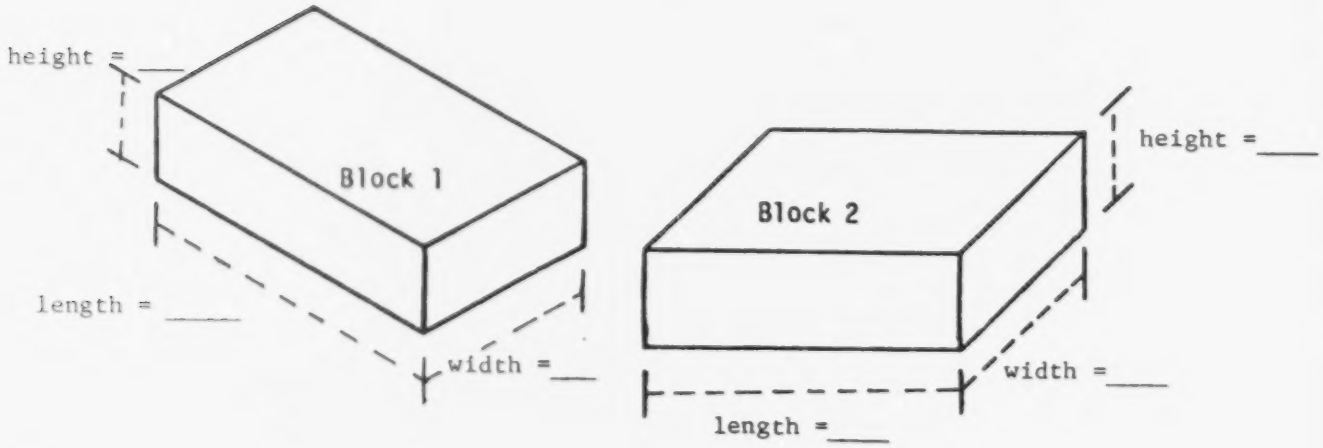
NAME _____

WORKSHEET

COURSE: Introduction to Agriculture and Natural Resources

COMPETENCY: #016 - "Make Simple Working Drawings"

INSTRUCTIONS: Complete the following problems, giving answers in simplest form. Make measurements to the nearest 1/16 inch.



1. Measure the above blocks and place answers in the spaces provided.

2. If "Block 1" was glued on top of "Block 2", how thick would the two blocks be together? _____ inches.

3. How much thicker is "Block 2" than "Block 1"? _____ inches.

4. How long would the two blocks be if glued end-to-end? _____ inches.

5. How wide would the two blocks be if glued together side-by side? _____ inches.

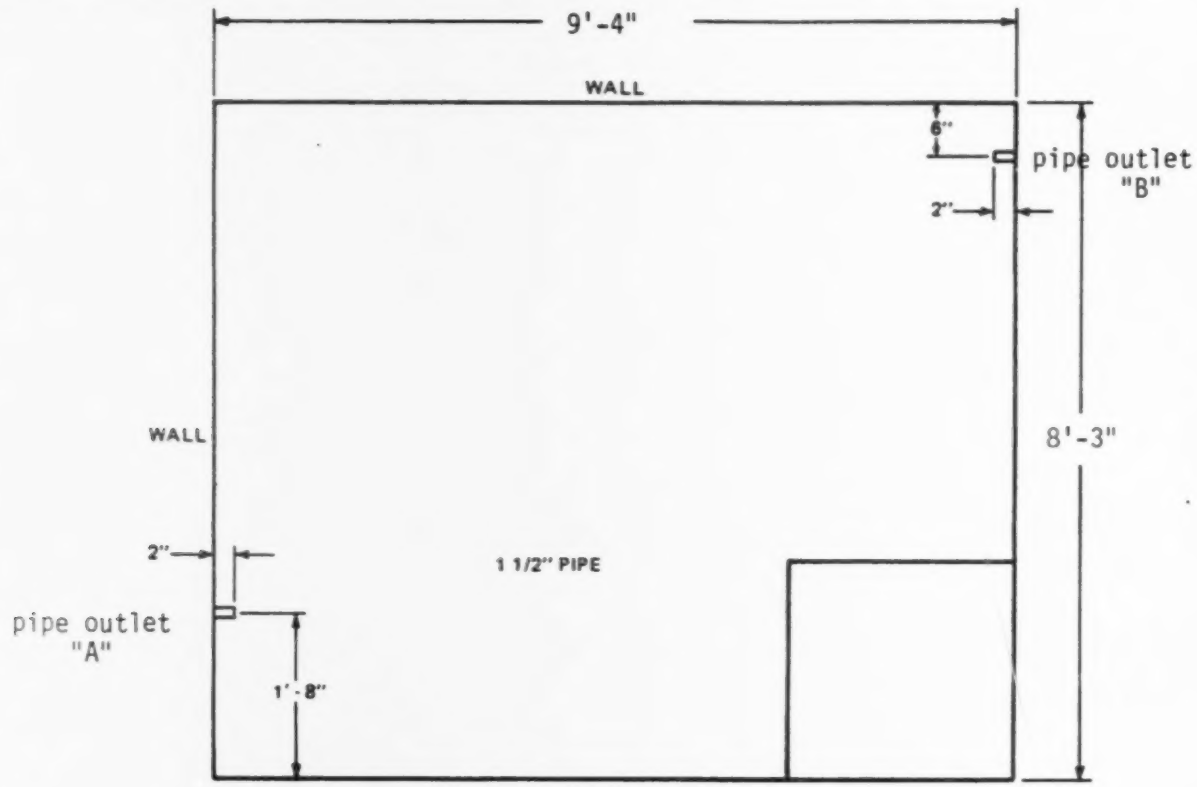
NAME _____

WORKSHEET

COURSE: **Agricultural Production II**

COMPETENCY : # 022 - "Plan a plumbing job on a given farmstead"

INSTRUCTIONS : Complete the following problems.



1. Draw a piping diagram for the above drawing to connect pipe outlet A to pipe outlet B maintaining 6 inches from the wall. Make the pipe travel the shortest and simplest route.

2. Calculate the end-to-center measurements and center-to-center measurements for all pieces. Allow 1/2 inch for couplings or unions. (NOTE: End-to-center measurement is from the end of one fitting to the center of another. Center-to-center measurement is from the center of one fitting to the center of another.)

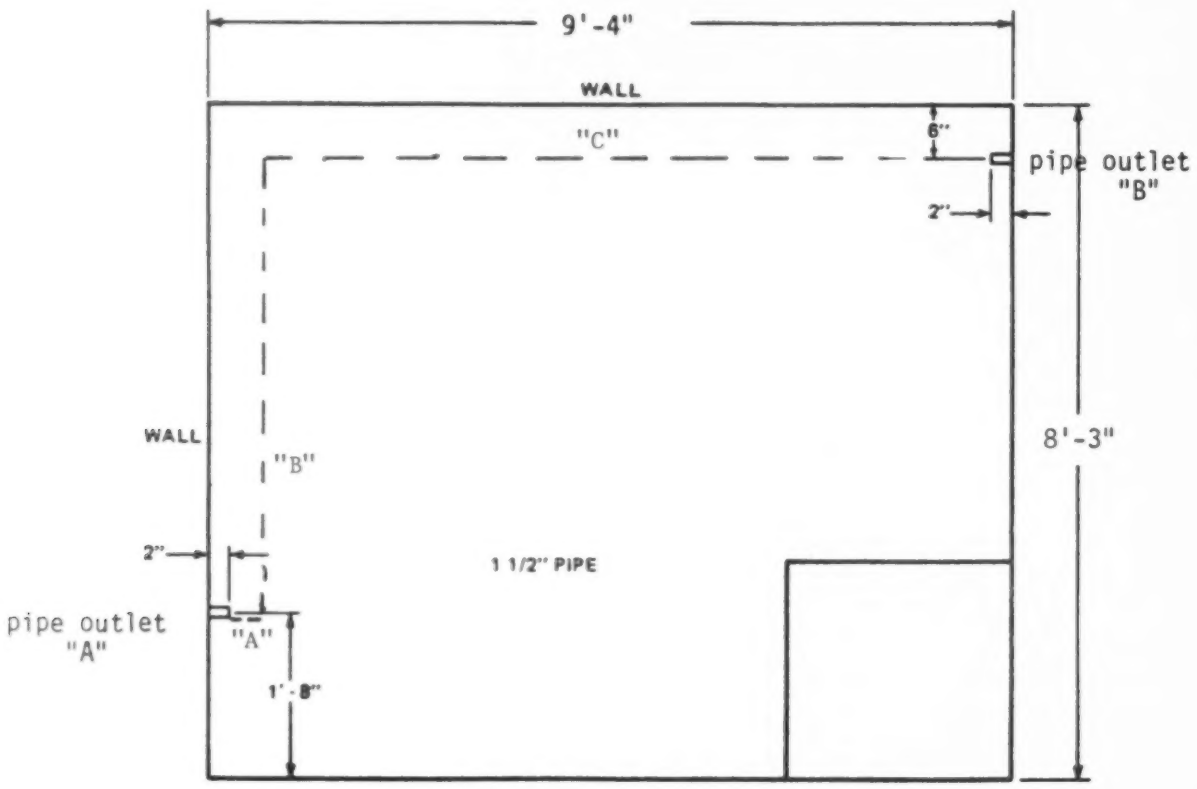
ANSWER KEY FOR MODULE TITLED "READING A RULE"

Module Training Unit:
(1a.) 1/4" (1b.) 1/2" (1c.) 11/16" (1d.) 15/16" (1e.) 1 1/16"
(1f.) 1 9/16" (1g.) 2 3/16" (1h.) 2 7/16" (1i.) 2 13/16"
(1j.) 3 5/16" (1k.) 3 7/8" (1l.) 4 5/16"
(2.) 6 3/8" (3.) 1 11/16 (4.) 18 7/32" (5.) 5/16"

Competency #015 Worksheet:
The farmstead layout should be drawn on a large sheet of drawing paper and the buildings should be the following sizes: (a.) House - 3 1/2" x 8 1/4" (b.) Barn - 5" x 12 1/2"
(c.) Equipment Storage Shed - 3 1/2" x 15" (d.) Utility Storage Building - 3" x 4 1/2"

Competency #016 Worksheet:
(1.) Block 1: height = 1/2" length = 1 3/4" width = 1"
Block 2: height = 9/16" length = 1 13/16" width = 1"
(2.) 1 1/16" (3.) 1/16" (4.) 3 9/16" (5.) 2"

Competency #022 Worksheet:
(1.)



(2.) Pipe A = 3" (end-to-center) Pipe B = 6' 6" (center-to-center)
Pipe C = 8' 7" (end-to-center)